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# Report of the technical review of the sixth national communication of Romania

Parties included in Annex I to the Convention are requested, in accordance with decision 9/CP.16, to submit a sixth national communication to the secretariat by 1 January 2014. In accordance with decision 7/CMP.8, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their sixth national communication supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.

This report presents the results of the technical review of the sixth national communication and supplementary information under the Kyoto Protocol of Romania conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

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# I. Introduction and summary

## A. Introduction

1. For Romania, the Convention entered into force on 6 September 1994 and the Kyoto Protocol on 16 February 2005. Under the Convention, Romania made a commitment to contribute to the joint European Union (EU) economy-wide emission reduction target of 20 per cent below the 1990 level by 2020.[1] Under the Kyoto Protocol, Romania committed itself to reducing its greenhouse gas (GHG) emissions by 8.0 per cent compared with the base year level[2] during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Romania committed to contributing to the joint EU target of reducing its GHG emissions by 20.0 per cent below the base year level.

2. This report covers the in-country technical review of the sixth national communication (NC6) of Romania, coordinated by the secretariat, in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (decision 23/CP.19) and the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1).

3. The review took place from 23 to 28 June 2014 in Bucharest, Romania, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Nicolo Macaluso (Canada), Mr. Vishwa Bandhu Pant (India), Mr. Manfred Ritter (Austria) and Ms. Tatiana Tugui (Republic of Moldova). Mr. Pant and Mr. Ritter were the lead reviewers. The review was coordinated by Mr. Daniel Hooper (secretariat).

4. During the review, the expert review team (ERT) reviewed each section of the NC6. The ERT also reviewed the supplementary information provided by Romania as a part of the NC6 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Romania in its 2013 annual submission and previous submissions under Article 7, paragraph 1, of the Kyoto Protocol.

5. In accordance with decisions 23/CP.19 and 22/CMP.1, a draft version of this report was communicated to the Government of Romania, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

## B. Summary

6. The ERT conducted a technical review of the information reported in the NC6 of Romania in accordance with the "Guidelines for the preparation of national

[1] Please note that the target under the Convention applies to the EU and its 28 member States (EU-28), while the target under the Kyoto Protocol for its second commitment period applies to the EU-28 and Iceland. A political statement on the fulfilment of the target under the Kyoto Protocol for the second commitment period by the EU-28 jointly with Iceland is contained in document FCCC/KP/CMP/2012/13, paragraph 45.

[2] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$), and 1995 for perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride ($SF_6$). The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines on NCs). Some of the information required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[3] is not provided in the NC6 (see para. 112). The supplementary information on the minimization of adverse impacts referred to in paragraph 4 above is complete and transparent.

7. Romania considered some of the recommendations provided in the report on the in-depth review of its fifth national communication.[4] During the review, Romania provided further relevant information on:

(a) The missing supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol (see para. 6 above);

(b) How its national circumstances affect GHG emissions and removals;

(c) Action taken to support related capacity-building in developing countries;

(d) Its targets and associated emission projections for sectors not covered by the European Union Emissions Trading System (EU ETS) (i.e. non-ETS sectors);

(e) Its projection modelling scenarios, in particular the assumptions and conditions associated with its 'without measures' scenario;

(f) Analytical adaptation studies;

(g) Its Global Climate Observing System (GCOS) activities;

(h) Its actions related to public awareness campaigns.

### 1. Completeness and transparency of reporting

8. Gaps and issues related to the reported information identified by the ERT are presented in table 1.

### 2. Timeliness

9. The NC6 was submitted on 19 December 2013, before the deadline of 1 January 2014 mandated by decision 9/CP.16.

### 3. Adherence to the reporting guidelines

10. The information reported by Romania in its NC6 is mostly in adherence to the UNFCCC reporting guidelines on NCs as per decision 4/CP.5 (see table 1).

[3] Decision 15/CMP.1, annex, chapter II.
[4] FCCC/IDR.5/ROU.

Table 1
**Assessment of completeness and transparency issues of reported information in the sixth national communication of Romania**[a]

| *Sections of national communication* | *Completeness* | *Transparency* | *Reference to paragraphs* | *Supplementary information under the Kyoto Protocol* | *Completeness* | *Transparency* | *Reference to paragraphs* |
|---|---|---|---|---|---|---|---|
| Executive summary | Complete | Transparent | | National systems | Complete | Transparent | |
| National circumstances | Mostly complete | Transparent | 12 | National registries | Partially complete | Partially transparent | 22, 24 |
| Greenhouse gas inventory | Complete | Transparent | | Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 | Complete | Transparent | |
| Policies and measures (PaMs) | Complete | Mostly transparent | 32 | PaMs in accordance with Article 2 | Mostly complete | Mostly transparent | 63, 64 |
| Projections and total effect of PaMs | Mostly complete | Transparent | 87 | Domestic and regional programmes and/or arrangements and procedures | Partially complete | Partially transparent | 26, 28 |
| Vulnerability assessment, climate change impacts and adaptation measures | Complete | Transparent | | Information under Article 10[b] | NA | NA | |
| Financial resources and transfer of technology[c] | NA | NA | | Financial resources[c] | NA | NA | |
| Research and systematic observation | Mostly complete | Transparent | 102 | Minimization of adverse impacts in accordance with Article 3, paragraph 14 | Complete | Transparent | |
| Education, training and public awareness | Complete | Mostly transparent | 108 | | | | |

*Abbreviation*: NA = not applicable.

[a] A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter on conclusions and recommendations.

[b] For the purposes of reporting information in this table, this assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant for developed country Parties and other developed Parties included in Annex II to the Convention only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

[c] Reporting on financial resources under the Kyoto Protocol is relevant to developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Romania is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

# II. Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol

## A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol

### 1. Information on relevant national circumstances

11. In its NC6, Romania has provided a detailed description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of policies and measures (PaMs) is provided in chapter II.B below.

12. The description in the NC6 included information on Romania's government structure, population, geography, climate, economy, energy, transport, industry, waste, building stock and urban structure, agriculture, and land use and forestry. While the NC6 includes all the headings recommended by the UNFCCC reporting guidelines on NCs, it does not include information required by the UNFCCC reporting guidelines on NCs on how national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time. In order to improve the completeness of the description of its national circumstances, the ERT recommends that Romania include this information in its next national communication (NC).

13. During the review, Romania provided additional information on its national circumstances that explains the relationship between national circumstances and GHG emissions trends, including indicators. For example, the Party stated that Romania was able to decouple the growth of the national economy and energy consumption, owing to energy efficiency measures. Specifically, from 2007 to 2008, the gross domestic product (GDP) increased by 7.3 per cent, while primary energy consumption only increased by 1.3 per cent.

14. In accordance with Article 4, paragraph 6, of the Convention and decision 9/CP.2, Romania, as a Party with an economy in transition, may use 1989 as its base year. The ERT noted that during the period 1989–2011 the population decreased by 7.6 per cent and the GDP increased by 20.9 per cent, while GHG emissions per GDP decreased by 62.7 per cent and GHG emissions per capita decreased by 51.1 per cent. Table 2 illustrates the national circumstances of Romania by providing some indicators relevant to GHG emissions and removals.

Table 2
**Indicators relevant to greenhouse gas emissions and removals for Romania**

| | *1989* | *1990* | *2000* | *2005* | *2010* | *2011* | *Change 1989–2011 (%)* | *Change 2010–2011 (%)* |
|---|---|---|---|---|---|---|---|---|
| Population (million) | 23.16 | 23.20 | 22.44 | 21.63 | 21.44 | 21.39 | –7.6 | –0.2 |
| GDP (2005 USD billion using PPP) | 193.00 | 182.20 | 153.46 | 202.53 | 234.13 | 233.27 | 20.9 | –0.4 |
| TPES (Mtoe) | 69.18 | 62.25 | 36.23 | 38.69 | 35.03 | 35.83 | –48.2 | 2.3 |
| GHG emissions without LULUCF (kt $CO_2$ eq) | 273 325.51 | 244 487.26 | 133 557.88 | 141 584.31 | 116 639.55 | 123 359.15 | –54.9 | 5.8 |
| GHG emissions with LULUCF (kt $CO_2$ eq) | 251 812.84 | 217 131.87 | 104 338.29 | 113 521.44 | 90 808.74 | 98 054.21 | –61.1 | 8.0 |
| GDP per capita (2005 USD thousand using PPP) | 8.33 | 7.85 | 6.84 | 9.36 | 10.92 | 10.91 | 31.0 | –0.1 |
| TPES per capita (toe) | 2.99 | 2.68 | 1.61 | 1.79 | 1.63 | 1.68 | –43.8 | 3.1 |
| GHG emissions per capita (t $CO_2$ eq) | 11.80 | 10.54 | 5.95 | 6.54 | 5.44 | 5.77 | –51.1 | 6.1 |
| GHG emissions per GDP unit (kg $CO_2$ eq per 2005 USD using PPP) | 1.42 | 1.34 | 0.87 | 0.70 | 0.50 | 0.53 | –62.7 | 6.0 |

*Sources*: (1) GHG emissions data: Romania's 2013 GHG inventory submission (version 2.2); (2) Population, GDP and TPES data: International Energy Agency.

*Note*: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

*Abbreviations*: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

## 2. Information on the greenhouse gas inventory, emissions and trends

15. Romania has provided a summary of information on GHG emission trends for the period 1989–2011. This information is fully consistent with the 2013 national GHG inventory submission (version 2.2). Summary tables, including trend tables for emissions in carbon dioxide equivalent ($CO_2$ eq) (given in the common reporting format (CRF) tables, version 2.2), are provided in an annex to the NC6.

16. Total GHG emissions[5] excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 54.9 per cent between 1989 and 2011, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 61.1 per cent over the same period. Trends in total GHG emissions were mostly underpinned by GHG emission trends in the energy and industrial processes sectors, which were driven by the decrease in industrial output and the related decrease in energy consumption as a result of the restructuring of the economy in the 1990s. Specifically, total GHG emissions decreased by 52.1 per cent from 1989 to 1999, triggered by the transition of Romania from a centralized to a market economy. This transition resulted in a decrease

[5] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of $CO_2$ eq excluding LULUCF, unless otherwise specified.

in industrial output, the closing of some industrial and manufacturing facilities, and a decrease in energy consumption. While emissions increased by 6.4 per cent from 2000 to 2007 owing to economic growth in Romania, emissions decreased from 2007 owing to the impact of the global financial and economic crisis. In 2011, emissions increased owing to the economic recovery and a continued reliance on fossil fuels for the primary energy supply.

17. The largest emissions decrease from 1989 to 2011 was carbon dioxide ($CO_2$) emissions, which decreased by 55.0 per cent (excluding LULUCF) owing to the reduction in the use of fossil fuels in the energy sector, particularly in the public electricity sector and heat production, as well as the manufacturing industries and construction sector driven by the decline in economic output. Total methane ($CH_4$) emissions decreased by 52.2 per cent between 1989 and 2011 owing to a decrease in fugitive emissions from fossil fuel extraction and a decrease in livestock numbers. Total nitrous oxide ($N_2O$) emissions decreased by 54.5 per cent owing to the decreases in livestock numbers, the amount of nitrogen synthetic fertilizer applied on soils, and crop production levels.

18. Total emissions of fluorinated gases (F-gases), namely perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride ($SF_6$), decreased by 75.5 per cent from 1995 to 2011.[6] While PFC emissions decreased by 99.4 per cent from 1995 to 2011, HFC emissions increased by 363.5 per cent and $SF_6$ emissions by 11,864.4 per cent over the same period. These emission increases resulted from replacing ozone-depleting substances in cooling equipment, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) with HFCs, as well as extending the application of F-gases in modern technologies, such as cooling equipment (HFCs) and electronics ($SF_6$). Analysis of the drivers for GHG emission trends in each sector is provided in chapter II.B below. Table 3 provides an overview of GHG emissions by sector from the base year (1989) to 2011.

Table 3
**Greenhouse gas emissions by sector in Romania, 1989–2011**

| | *GHG emissions (kt $CO_2$ eq)* | | | | | *Change (%)* | | *Share[a] by sector (%)* | |
|---|---|---|---|---|---|---|---|---|---|
| *Sector* | *1989* | *1990* | *2000* | *2010* | *2011* | *1989–2011* | *2010–2011* | *1989* | *2011* |
| 1. Energy | 191 809.14 | 177 768.20 | 92 894.36 | 79 624.01 | 86 320.46 | –55.0 | 8.4 | 72.7 | 70.0 |
| A1. Energy industries | 74 355.62 | 71 192.76 | 42 761.01 | 33 162.82 | 36 621.90 | –50.7 | 10.4 | 29.1 | 29.7 |
| A2. Manufacturing industries and construction | 70 076.86 | 55 719.35 | 18 735.92 | 13 207.96 | 15 761.24 | –77.5 | 19.3 | 22.8 | 12.8 |
| A3. Transport | 7 574.06 | 11 962.16 | 9 396.31 | 14 300.12 | 14 577.72 | 92.5 | 1.9 | 4.9 | 11.8 |
| A4.–A5. Other | 16 568.95 | 17 242.29 | 9 256.01 | 10 505.32 | 10 806.63 | –34.8 | 2.9 | 7.1 | 8.8 |
| B. Fugitive emissions | 23 233.65 | 21 651.63 | 12 745.10 | 8 447.77 | 8 552.97 | –63.2 | 1.2 | 8.9 | 6.9 |
| 2. Industrial processes | 35 466.12 | 24 890.14 | 16 826.43 | 12 414.25 | 12 605.14 | –64.5 | 1.5 | 10.2 | 10.2 |
| 3. Solvent and other product use | 645.80 | 540.50 | 224.30 | 124.74 | 125.61 | –80.5 | 0.7 | 0.2 | 0.1 |
| 4. Agriculture | 40 734.14 | 36 708.34 | 18 455.10 | 18 760.94 | 18 941.46 | –53.5 | 1.0 | 15.0 | 15.4 |
| 5. LULUCF | –21 512.67 | –27 355.39 | –29 219.59 | –25 830.81 | –25 304.94 | 17.6 | –2.0 | NA | NA |
| 6. Waste | 4 670.31 | 4 580.08 | 5 157.70 | 5 715.62 | 5 366.48 | 14.9 | –6.1 | 1.9 | 4.4 |

[6] Emissions data from the base year (1989) to 1994 is not available.

| Sector | GHG emissions (kt $CO_2$ eq) | | | | | Change (%) | | Share[a] by sector (%) | |
|---|---|---|---|---|---|---|---|---|---|
| | 1989 | 1990 | 2000 | 2010 | 2011 | 1989–2011 | 2010–2011 | 1989 | 2011 |
| 7. Other | NA | NA | NA | NA | NA | – | – | – | – |
| **GHG total with LULUCF** | **251 812.84** | **217 131.87** | **104 338.29** | **90 808.74** | **98 054.21** | **–61.1** | **8.0** | **NA** | **NA** |
| **GHG total without LULUCF** | **273 325.51** | **244 487.26** | **133 557.88** | **116 639.55** | **123 359.15** | **–54.9** | **5.8** | **100.0** | **100.0** |

*Source*: Romania's 2013 GHG inventory submission, version 2.2 (for GHG emission data).

*Note*: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

*Abbreviations*: NA = not applicable, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

### 3. National system

19. Romania provided in its NC6 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The description includes all the elements as required by decision 15/CMP.1. The ERT took note of the review of the changes to the national system as reflected in the report of the individual review of the GHG inventory of Romania submitted in 2013.[7]

20. Prior to 1 April 2013, the competent authority responsible for administrating the national system in Romania was the National Environmental Protection Agency (NEPA), under the subordination of the Ministry of Environment and Climate Change (MECC). Under Governmental Decision 48/2013, all NEPA climate change-related structures, personnel, attributions and responsibilities were taken over by MECC beginning on 1 April 2013. This restructuring was done in order to improve the institutional arrangements and capacities of Romania within the climate change domain, thus increasing the efficiency in implementing activities under the national system and the national GHG inventory. MECC is now also responsible for the estimation of GHG emissions and the preparation of the annual GHG inventory report, as well as all policy aspects of climate change.

21. The ERT notes the improvements made to Romania's national system since its fifth national communication (NC5), such as the extended institutional capacity of MECC, and commends the Party for these improvements. In addition, Romania implemented several improvements to its national GHG inventory system, including collection methods for new GHG data and the methods for estimating GHG emissions as a result of the data collection.

### 4. National registry

22. In its NC6, Romania provided some information on the national registry in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. The ERT took note of the review of the changes to the national registry as reflected in the report of the individual review of the annual submission of Romania submitted in 2013.

[7] Available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600008027#beg>.

23. In its NC6, Romania cited other sources for information, including the common readiness documentation and specific readiness documentation for the national registry of the EU and all consolidating national registries, which were initially contained in annex 3.4 of the NC6. However, the information provided in this annex was confidential, and therefore could not be included in Romania's official submission to the UNFCCC. As a result, this information regarding the national registry could not be made publicly available, including information on the changes to the national registry due to the centralization of the operations of the EU ETS in a single European Union registry operated by the European Commission called the Consolidated System of European Union Registries (CSEUR). CSEUR is a consolidated platform which implements the national registries in a consolidated manner and was developed together with the new European Union registry. To increase the transparency of its national registry, the ERT recommends that Romania include all the required information directly in the next NC submission.

24. In its NC6, Romania does not include a sufficient description of the database structure and capacity of the national registry, or information on the names of the other Parties with which the Party cooperates by maintaining their national registries in a consolidated system. During the review, Romania informed the ERT that its national registry does not have collaboration arrangements with any other member State, only the European Commission, due to the centralization of the EU ETS operations into the CSEUR. To increase the completeness of its national registry information, the ERT recommends that Romania provide information on its database structure and its involvement in the CSEUR in its next NC.

## 5. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

25. Romania has reported in its NC6 information on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol. The NC6 does not include some of the information required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol, including:

(a) A description of procedures for addressing cases of non-compliance under domestic law;

(b) A description of any provisions to make information on legislative arrangements and enforcement and administrative procedures (e.g. rules on enforcement and administrative procedures, and action taken) publicly accessible;

(c) A description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.

26. During the review, Romania stated that, as an EU member State, it has implemented the EU climate change policy instruments, including the EU ETS. Under the EU ETS, there are provisions for non-compliance which Romania complies with on a domestic level. Regarding making information publicly accessible, Romania stated that under Law 52/2003 all draft legal acts are made publicly available for consultation and comment through the MECC web page.[8]

27. Romania also stated during the review that it is implementing a Kyoto Protocol joint implementation project relating to afforestation/reforestation, and has implemented the Forestry Development Project at the national level to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4,

[8] <http://mmediu.ro/>.

of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. In order to improve the completeness of the information provided on its domestic and regional programmes, the ERT recommends that Romania include the missing information as listed in para. 25 in its next NC.

28. In addition, the NC6 provides limited information on the implementation of the domestic and regional legislative arrangements and administrative procedures Romania has in place to meet its commitments under the Kyoto Protocol. Specifically, the NC6 lists the names of the domestic and regional legislative arrangements, but does not provide information on their objectives, purpose or methods of implementation. To improve transparency, the ERT recommends that Romania include this information in its next NC.

29. As mentioned in paragraph 20 above, the overall responsibility for climate change policymaking and legislative developments in Romania lies within MECC, including compliance with its commitments under the Convention and its Kyoto Protocol. Implementation of the Kyoto Protocol is underpinned by Romania's National Strategy for Climate Change 2013–2020 and Romania's implementation of the EU framework legislation, the climate and energy package, adopted in 2009. A National Committee on Climate Change was approved in 2006 by Governmental Decision 658/2006 as an interministerial body for monitoring the implementation of climate change policy, for which MECC acts as the technical secretariat. During the review, Romania informed the ERT that MECC has initiated a reorganization of the National Commission in order to revise its obligations in line with new requirements under EU policies, such as the EU climate and energy package. Other agencies involved in climate change policy in Romania are the Institute for Studies and Power Engineering and the National Environmental Protection Agency.

30. The NC6 did not include a description of the interactions between ministries on the development of legislation and the associated distribution of enforcement responsibilities. During the review, Romania stated that the various ministries actively cooperate to prepare draft regulations that require interministerial approval, depending on the scope of the legislation and the technical areas addressed. The process is governed by Governmental Decision 561/2004, which outlines the procedures for the development, submission and approval of draft policy documents, draft laws and other documents. Additionally, depending on the roles and responsibilities allocated and on the procedures defined through specific legislation, different ministries do interact with respect to enforcement. To increase transparency, the ERT encourages Romania to include this information in its next NC.

## B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

31. Romania has provided in its NC6 comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol.

### 1. Policies and measures related to implementation of commitments under the Convention

32. In its NC6, Romania reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention. Romania provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, in accordance with the objective of the Convention. Romania reported on its policy context and national targets and objectives set to implement its commitments under

the Convention. The NC6 contains, with some exceptions, a similar set of PaMs to those in the NC5.

33. In its NC6, Romania has also provided information on domestic PaMs by sector and by gas and a description of the principal PaMs. However, Romania did not identify which PaMs were being implemented in accordance with EU policies, such as the EU climate and energy package, and which PaMs were being implemented in addition to EU policies on a domestic level. This lack of transparency made it difficult for the ERT to understand the objectives and goals of some PaMs, and the interaction among them. To increase the transparency of its PaMs, the ERT recommends that Romania further describe the link between its national PaMs and the overall EU policies in its next NC.

34. In its NC6, Romania did not indicate which PaMs have the most significant impact on GHG emissions and removals. During the review, Romania identified three PaMs as having the most significant impact on GHG emissions trends, including: the National Renewable Energy Action Plan; the EU ETS; and the improvement of land use (ensuring sustainable land management). To increase transparency, the ERT encourages Romania to identify which PaMs have the most significant impact in its next NC. In its NC6, Romania does not identify which PaMs are new since the NC5 reporting period. For the PaMs that were reported in the NC5 and NC6 (they have been maintained over time), there is no discussion relating to any changes made by Romania to the PaMs and the associated impacts on the mitigation effects achieved. To increase transparency in its next NC, the ERT encourages Romania to provide an overview of the updates and modifications to its PaMs since its last NC, including the date (or planned date) of implementation or adoption, and the impact on mitigation effects achieved, if applicable.

35. Romania provides a clear and complete description of the institutional arrangements of its national inventory system, including the names and responsibilities of relevant people, as well as the institutional, legal and procedural arrangements in place to prepare the annual GHG emissions inventory. However, there is limited information on the progress in monitoring and evaluating GHG mitigation PaMs over time, in particular in relation to the requirements under the EU monitoring mechanism regulation (regulation 525/2013/EU). During the review, the Party presented additional information on the monitoring and evaluation of on-going PaMs, in particular for the energy sector. To increase transparency, the ERT encourages Romania to include this information in its next NC.

36. In its NC6, Romania comprehensively reports PaMs by the sectors recommended by the UNFCCC reporting guidelines on NCs, subdivided by GHG. In addition, Romania provided a brief textual description of its PaMs, as well as presented its PaMs in tabular format, including general tables listing the PaMs and an overview table of cross-sectoral PaMs. However, the correlation between the description of each PaM in the designated sector chapter and the overall PaMs tables was not fully transparent. During the review, Romania provided an extended PaMs table that links every PaM with the corresponding text in the PaMs chapter of the NC6. To increase transparency, the ERT encourages Romania to link the tabular and textual information of its PaMs in its next NC.

37. In its NC6, Romania estimated the effects of a number of its PaMs and presented an overview table on its cross-sectoral PaMs that contained qualitative information on the sectors affected. However, the NC6 did not present the aggregated effects of its PaMs by sector or by gas as required by the UNFCCC reporting guidelines on NCs. During the review, Romania stated that its PaMs have not been aggregated since the effects of PaMs overlap and the effects are therefore not cumulative. The ERT acknowledged that estimating the aggregated effects of PaMs is not easy; however, such aggregation would allow a better understanding of the effects of the principal PaMs and provide a more transparent link between the projection results and the PaMs included in the various

projection scenarios. To increase transparency, the ERT encourages Romania to estimate the effects of the principal PaMs for the relevant sectors and link it with the aggregated effects of PaMs presented in the projections chapter and tables, or explain why it is unable to do so, in its next NC.

38. In its NC6, Romania identified the type of policy or measure for the majority of its PaMs as "Other (planning)", while the UNFCCC reporting guidelines on NCs state that, to the extent possible, the following terms should be used: economic, fiscal, voluntary/negotiated agreements, regulatory, information, education, research, or other. In addition, the implementation status of most PaMs is identified by the Party as "planned" or "implemented" with no additional information provided. To increase transparency, the ERT encourages Romania to utilize the various "type of policy or measure" labels contained in the UNFCCC reporting guidelines on NCs, and to identify what concrete actions have already been taken regarding adopted or implemented PaMs (such as funding provided) in its next NC.

39. In its NC6, Romania does not provide information on costs and benefits of its PaMs. During the review, the Party stated that cost estimates were not available. To increase completeness of its reporting, the ERT encourages Romania to include information about the costs and benefits of its PaMs, or include information why it is not possible, in its next NC.

40. Most of the recommendations made in the previous review report (IDR.5) were taken into consideration by the Party in order to improve its reporting in the NC6, including:

(a) The presentation of the sectoral PaMs by GHG;

(b) Summary tables on PaMs by sector;

(c) Information on which GHG is affected by which PaM, the type of PaM (e.g. economic, fiscal or voluntary agreement), the status of implementation, the implementing entities and quantitative estimates of the mitigation impact;

(d) Information on how Romania believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions.

### 2. Policy framework and cross-sectoral measures

41. The key policy framework related to climate change in Romania is the National Strategy for Climate Change 2013–2020 (hereinafter referred to as the National Strategy), which was approved by the Romanian Government in 2013. The National Strategy addresses the reduction of GHG emissions in achieving the national objectives and GHG emission targets for 2020, as well as adaptation measures to allow society and ecosystems to adapt to climate change. Specifically, the National Strategy takes into account relevant EU policies, such as the EU climate and energy package.

42. The National Strategy for Sustainable Development – Horizons 2013, 2020, and 2030, approved by Governmental Decision 1460/2008 also contains cross-sectoral measures that highlight the principles of efficiency and the use of the best available technologies considered in the industrial policies and public procurement, and supports the improvement of the quality of, and access to, infrastructure for wastewater treatment. In addition, this strategy focuses on the future evolution of the energy sector, the industrial sector, the agriculture and forestry sectors, and the development of the transport sector in rural areas.

43. To achieve its GHG emission reduction objectives and targets, Romania plans to utilize the two main overarching cross-sectoral PaMs within the EU climate and energy

package: the EU ETS and the EU effort-sharing decision (ESD) (decision 406/2009/EC). In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations, which produce 40–45 per cent of the GHG emissions of the EU. The third phase of the EU ETS started in 2013 and now covers aircraft operations (2012) as well as $N_2O$ emissions from chemical industries, PFC emissions from aluminium production and $CO_2$ emissions from industrial processes (2013). The aim of the EU ETS is to decrease GHG emissions from the covered sectors (ETS sectors) by 21.0 per cent below the 2005 level by 2020.

44. The ESD became operational in 2013 and covers sectors not covered by the EU ETS (non-ETS sectors), including transport (excluding aviation and international maritime transport), residential and commercial buildings, agriculture, waste and other sectors, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions from the non-ETS sectors by 10.0 per cent below the 2005 level by 2020 and it includes annual binding and non-binding targets for 2013–2020, which are underpinned by the national policies and actions of the EU member States. Romania's non-ETS sector GHG emissions target is to limit GHG emission growth to 19.0 per cent above the 2005 level by 2020.

45. Some PaMs are implemented at the regional and local level, such as the preparation of waste management plans as part of the National Strategy on Waste Management and the National Waste Management Plan. Romania provided comprehensive information on PaMs at the national and subnational/regional levels. Table 4 provides a summary of the reported information on the PaMs of Romania.

Table 4
**Summary of information on policies and measures reported by Romania**

| *Sectors affected* | *List of key policies and measures* | *Estimate of mitigation impact (kt $CO_2$ eq) 2020* |
|---|---|---|
| ***Policy framework and cross-sectoral measures*** | | |
| | National Strategy for Climate Change 2013–2020 | NE |
| | National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 | 7 599.00 |
| | EU ETS | 15 000.00 |
| ***Energy*** | Romania's Energy Strategy for 2007–2020 | 8 336.87 |
| Renewable energy | National Renewable Energy Action Plan | 4 766.73 |
| Energy efficiency | The second National Action Plan on Energy Efficiency for 2011–2020 | 955.66 |
| Residential and commercial sectors | Modernization of the residential sector | 396.27 |
| ***Transport*** | Modernization of the transport sector | 302.87 |
| | The Romania Intermodal Transport Strategy – 2020 | NE |
| ***Industrial sector*** | Modernization of the industrial sector | 520.04 |
| ***Agriculture*** | Order 1182/1270/2005 – Protection of waters against pollution caused by nitrates | 1 550.00 |
| ***Forestry*** | The improvement of land use (ensuring sustainable land management) | 5 121.43 |

| *Sectors affected* | *List of key policies and measures* | *Estimate of mitigation impact (kt $CO_2$ eq) 2020* |
|---|---|---|
| | Forest Development Project | NE |
| | National Programme on Afforestation and the National Rural Development Programme 2007–2013 | NE |
| ***Waste management*** | The improvement of the management of solid waste | 1 408.68 |
| | National Strategy on Waste Management and the National Waste Management Plan | IE |

*Note*: The greenhouse gas reduction estimates given for some measures are reductions in carbon dioxide equivalent for 2020.

*Abbreviations*: EU ETS = European Union Emissions Trading System, IE = included elsewhere, NE = not estimated.

## 3. Policies and measures in the energy sector

46. Between 1989 and 2011, GHG emissions from the energy sector decreased by 55.0 per cent (105,488.68 kt $CO_2$ eq), mainly owing to the transition to a market-based economy, which led to a decrease in the economic output of Romania and resulted in a sharp drop in electricity demand. In particular, emissions from energy use in the manufacturing industry and construction sectors decreased by 77.5 per cent from 1989 to 2011 owing to the decrease in industrial production. However, there has been a significant increase in emissions related to fuel combustion from transport of 92.5 per cent over the same period due to the increase in the number of private cars.

47. Romania has implemented PaMs for the energy sector in order to meet the current, medium and long-term energy demand at the lowest possible price, while continuing to develop a modern market economy and improve citizens' living standards. Romania's Energy Strategy for 2007–2020 (Governmental Decision 1069/2007) and its National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 are the two main cross-sectoral PaMs in the energy sector. Romania's Energy Strategy for 2007–2020 aims to enhance the security of Romania's energy supply, utilize locally available primary energy resources, enhance the use of renewable energy and enact electricity market reforms. In addition, the EU ETS is a key cross-sectoral PaM that covers all relevant energy installations in Romania, responsible for an estimated emission reduction of approximately 15,000 kt $CO_2$ eq in 2020.

48. ***Energy supply***. According to the energy supply data from the International Energy Agency,[9] the total primary energy supply for Romania in 2012 consisted primarily of natural gas (31.0 per cent), oil (23.8 per cent) and coal (21.7 per cent), with the remainder being supplied by renewables (12.0 per cent), nuclear (8.6 per cent) and hydro (3.0 per cent) power sources. The major PaM in the energy supply sector is Romania's Energy Strategy for 2007–2020, which envisages the following major changes: the replacement of old electricity generating units with modern units that have superior energy efficiencies; the re-engineering and retrofitting of 330 MW units operating in lignite-fired power plants; and the promotion of high-efficiency cogeneration, such as gas turbines with heat recovery boilers and combined cycles with gas turbines.

49. ***Renewable energy sources***. In 2012, Romania generated 7,853 MW of electricity from renewable energy sources (RES), including hydropower (6,511 MW), wind power

[9] *Energy Balances of non OECD Countries*. Available at <http://www.oecd-ilibrary.org/energy/energy-balances-of-non-oecd-countries_19962843-en>.

(1,314 MW), biomass (26 MW) and solar power (2 MW). As these figures show, hydropower generation and wind power generation accounted for almost the entire amount of electricity generated by RES in Romania in 2012. As part of the joint EU 2020 targets, Romania has committed to achieving a 24.0 per cent share of RES in the final consumption of energy by 2020. Romania's National Renewable Energy Action Plan aims to implement its target of a 24.0 per cent share of RES in the final consumption of energy by 2020. In absolute terms, this target translates into an increase in electricity generated from RES from 23.6 TWh in 2013 up to 31.4 TWh in 2020. In 2010, Romania had already achieved a 19.0 per cent share of renewable energy in its final energy consumption.

50. ***Energy efficiency***. The main energy efficiency related PaM in Romania is the second National Action Plan on Energy Efficiency for 2011–2020. This PaM focuses on primary energy saving measures increasing energy efficiency in the service sector and the public sector, and increasing the number of buildings with zero net energy consumption. Examples include: the improvement of the thermal performance of buildings; the modernization of the infrastructure for transport; the distribution of heat in centralized systems; the reduction of the water consumption; and incentives for consumers to purchase high-efficiency appliances and electronics. The NC6 discusses Romania's non-binding target to achieve an increase in energy efficiency of 19.0 per cent by 2020, which translates into an indicative national target of primary energy consumption for 2020 of 30.32 Mtoe, as part of the joint 2020 energy efficiency target for the EU.

51. ***Residential and commercial sectors***. The Second National Plan on Energy Efficiency 2011–2020 includes financial support for a number of projects on improving energy efficiency, urban heating and the thermal insulation of public buildings. For example, it includes incentives for the development of projects involving energy efficient houses, passive houses and/or active houses, as well as a programme for energy efficiency improvements in buildings occupied by people living on a low-income. It is estimated that the Second National Plan on Energy Efficiency 2011–2020 will result in GHG emission reductions of 41.5 per cent in 2020 in the residential sector compared with the average emissions from 2001 to 2005.

52. ***Transport sector***. Romania has several transport sector related PaMs aimed at reducing energy consumption and emissions from fuel combustion. Many of the PaMs in the transport sector are characterized by the speedy and focused implementation of the relevant EU directives, such as: Regulation (EC) 443/2009 setting emission performance standards for new passenger cars; Regulation (EC) 510/2011 setting emission performance standards for new light commercial vehicles; and directive 2003/30/EC and directive 2009/29/EC (transposed into national legislation by Governmental Decision 935/2011) that promote the use of biofuels and bioliquids to meet the 10.0 per cent renewable share target of the final national energy consumption in the transport sector for 2020.

53. The Romania Intermodal Transport Strategy – 2020, underlines the key role of intermodal transport for the efficient use of high-capacity transport methods (railway, inland waterways and sea transport). The general aim of the Intermodal Transport Strategy is the development of the national system for intermodal transport of goods aiming to increase the efficiency of goods transport, with a simultaneous positive impact on the environment and on traffic safety in Romania. In accordance with this strategy, the general target for 2020 is meeting, via this system, a transport share amounting to at least 40.0 per cent of the volume of goods carried in intermodal transport units on Romanian territory.

54. ***Industrial sector***. The National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 provides industrial development policy in accordance with the general objectives of sustainable economic development and in line with EU industrial policies. Industrial policy aims to apply the best technologies for improving energy efficiency, including retrofitting and the use of new technologies for the efficient processing of raw

materials and the efficient use of energy resources. In addition, implementing the EU ETS contributes to energy efficiency improvements for the manufacturing and construction industries.

### 4. Policies and measures in other sectors

55. Between 1989 and 2011, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 54.6 per cent (37,038.69 kt $CO_2$ eq), mainly owing to the decrease in livestock and crop production, as well as the decline in or termination of certain production activities, including chemical production, mineral production and metal production. However, GHG emissions (excluding LULUCF) for the waste sector have increased by 14.9 per cent from 1989 to 2011 owing to an increase in living standards and the increase of consumption per capita.

56. ***Agriculture***. Between 1989 and 2011, GHG emissions from the agriculture sector decreased by 53.5 per cent (21,792.68 kt $CO_2$ eq), mainly owing to decreases in livestock, rice cultivated areas, crop production levels, and the amount of nitrogen synthetic fertilizer applied. One of the main PaMs in the agriculture sector is the National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 (para. 42). It includes improving the efficiency of the use of nitrate-based fertilizers, encouraging the use of equipment for the treatment of wastewater in farming activities, reducing the fragmentation of agricultural surfaces and stimulating the concentration of small farms, and ensuring balanced and efficient feeding of farm animals.

57. In addition, Romania implemented EU directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources via Romanian legislation (Governmental Decision 964/2004 and Order 1182/1270/2005). Order 1182/1270/2005 is expected to result in 1,550.00 kt $CO_2$ eq of GHG emission reductions through the implementation of a nutrient management plan that is compulsory in areas declared vulnerable to pollution caused by nitrates.

58. ***LULUCF***. The LULUCF sector accounted for a net removal of 25,304.94 kt $CO_2$ eq in Romania in 2011 and net GHG removals have increased by 17.6 per cent since 1989. The main PaMs related to forestry in Romania include the National Programme on Afforestation and the National Rural Development Programme 2007–2013 (updated in 2012). In addition, Romania has prepared a development strategy for forestry, which contains the Forestry Development Project as a key component. The Forestry Development Project aims to improve the environmentally sustainable management of forests owned by the State and private property, and increase the contribution of forests to the national and rural economy by increasing the productivity, growth and competitiveness of the wood industry.

59. During the review, Romania explained that its estimates of the mitigation impact for its LULUCF sector PaMs ("the improvement of land use") of approximately 5,121.43 kt $CO_2$ eq mostly include afforestation activities and better soil management on arable land. However, these estimates are very provisional and might change significantly in the future. To increase transparency, the ERT encourages Romania to discuss the provisional status of its estimates, or include more definite estimates, in its next NC.

60. ***Waste management***. Between 1989 and 2011, GHG emissions from the waste sector increased by 14.9 per cent (696.17 kt $CO_2$ eq), mainly owing to the increase in consumption, the increase of managed waste sites instead of unmanaged waste sites and an increase in the population in relation to sewerage. The integrated approach to waste management (waste collection, transport, treatment, reuse and disposal activities) includes the construction of waste disposal facilities, together with measures for the prevention of waste generation and waste recycling. Romania acknowledges that considerable efforts are

still required for compliance with existing EU legislation on waste management, as well as of future requirements.

61. National legislation has been passed in Romania in line with EU directives relating to waste management, including the National Strategy on Waste Management, the National Waste Management Plan, and the National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 (para. 42). According to the NC6, the estimated mitigation impact of "The improvement of the management of the solid waste" PaM is 1,408.68 kt $CO_2$ eq. This includes recovering $CH_4$ emissions produced by landfill waste, improvement of the degree of the utilization of landfills and the achievement of landfill waste compliance goals.

### 5. Policies and measures related to implementation of commitments under the Kyoto Protocol

62. Romania reported on its package of PaMs adopted, implemented and elaborated in achieving its commitment under the Kyoto Protocol.

63. In its NC6, Romania did not transparently identify the steps it has taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. Information regarding Romania's national action plan for the reduction of GHG emissions in civil aviation was provided in its NC6; however, it was not discussed in the context of ICAO. In addition, the NC6 does not address the steps it has taken to promote and/or implement any decisions by IMO. During the review, Romania stated that it does not have a marine fleet, and therefore does not foresee the implementation of IMO decisions in the future. To increase transparency, the ERT recommends that Romania provide more information on its GHG emission reduction efforts for civil aviation in the context of ICAO, and provide a statement relating to the relevance of IMO decisions, in its next NC.

64. In its NC6, Romania did not provide information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts, on other Parties, especially developing country Parties. During the review, Romania stated that in July 2013, the Romanian Government adopted Governmental Decision 529/2013 on the National Climate Change Strategy (2013–2020). This document establishes the post-Kyoto Protocol objectives, targets and actions related to both mitigation and adaptation. In addition, as an EU member State, Romania has objectives, targets and actions to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties. To increase the completeness of its reporting, the ERT recommends that Romania include this information in its next NC.

65. Further information on how Romania strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, as reported in the 2013 annual submission, is presented in chapter III.B below.

## C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

66. In its NC6, Romania reported on three GHG emission projection scenarios until 2030. The emission projections were developed in 2013, using 2011 as the last historical year for all three scenarios. As a result, the existing projections reflect the currently available economic, social and demographic indicators.

### 1. Projections overview, methodology and key assumptions

67. The GHG emission projections provided by Romania in the NC6 include a 'with measures', a 'with additional measures' and a 'without measures' scenario until 2030, presented relative to actual inventory data for 1989, 2008, 2009, 2010 and 2011. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section and on a gas-by-gas basis for all the following GHGs: $CO_2$, $CH_4$, $N_2O$, PFCs, HFCs and $SF_6$ (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals.

68. The NC6 does not include some information required by the UNFCCC reporting guidelines on NCs regarding projection scenarios. The NC6 does not clearly state which PaMs are included in the 'without measures' scenario or what mitigation impacts are included in the emission projections. During the review, Romania explained that all implemented and adopted PaMs through 2011 are included in the 'without measures' scenario; however, the mitigation impacts of these PaMs are only considered up until 2011. In other words, the 'without measures' scenario assumes that the mitigation impacts of implemented and adopted PaMs are fixed at the last historical year level, which is 2011 for the NC6. To increase the transparency of the projection scenarios, the ERT encourages Romania to provide additional information on the definition of its 'without measures' scenario, as well as to identify which PaMs and their associated mitigation impacts are included, in its next NC. In addition, Romania may consider using a different base year for the 'without measures' scenario to allow for the effect of implemented and adopted PaMs from earlier years to be better reflected in the 'with measures' scenario.

69. In the NC6, Romania presents the results for 13 scenarios related to the evolution of electricity production in Romania, which reflect new installed capacity, electricity generation, fuel consumption, fuel costs and related $CO_2$ emissions. The scenarios were also assessed against several criteria to establish a 'grade' and ranking. While a wealth of information is presented, the relationship between the electric power sector scenarios analysed in the NC6 and the three projection scenarios ('without measures', 'with measures' and 'with additional measures') is not transparent. During the review, Romania stated that owing to the high degree of uncertainty related to key input assumptions, it is extremely difficult to determine the most likely structure of electricity generation during the 2013–2030 period. To improve transparency, the ERT encourages Romania to include fewer electric power sector scenarios in its projections, and provide more information on how the various electric power sector scenarios relate to the 'without measures', 'with measures' and 'with additional measures' scenarios, in its next NC.

70. In Romania's NC6, the 'without measures' scenario serves as the reference case and assumes that the mitigation impacts of implemented and adopted PaMs is fixed at the last historical year level, which is 2011 for the NC6. Therefore, the 'without measures' scenario projects GHG emissions according to the evolution of the socioeconomic drivers without

any mitigation impacts from new PaMs that could be adopted and implemented after 2011. The 'with measures' scenario includes the mitigation impacts of implemented and adopted PaMs through to 2030. The 'with additional measures' scenario considers the mitigation impacts of planned PaMs in addition to implemented and adopted PaMs through to 2030.

71. The methodology used for the preparation of the emission projections for the NC6 is mostly the same methodology as was used to prepare the emission projections for the NC5. The exception is for the LULUCF sector, where a new modelling approach was used for the NC6. In general, Romania's emission projection approach relies on historical data from the GHG inventory for the period 1989–2011 and on projections of drivers that are considered in Romania's relevant strategies and socioeconomic policies, such as economic activity, population and energy prices.

72. The projections are prepared using similar models – ENPEP[10] for energy (supply and demand) and accounting models for the industrial processes, agriculture and waste sectors. The projections for the LULUCF sector were prepared using the CBM-CFS3[11] model. The CBM-CFS3 software incorporates an empirical model that simulates the dynamics of all carbon stored in forest ecosystems according to the Kyoto Protocol (over- and below-ground biomass, litter and deadwood, as well as organic carbon deposited in soil). While the modelling approach described in the NC6 is comprehensive, the reporting of the strengths and weaknesses of the various models is not transparent. In addition, it is not transparent how the PaMs are assessed in the ENPEP model. The ERT encourages Romania to include such information in its next NC.

73. The GHG emission projections for the period 2015–2030 are based on common assumptions related to the key drivers, such as population and economic growth. The assumptions were based on a strengths, weaknesses, opportunities and threats (SWOT) analysis for the period 1989–2012. The assumptions related to Romania's macroeconomic development after 2013 reflect the likely evolution of Romania's relevant strategies and socioeconomic policies, as well as the continued strength of its export markets. While the key drivers of the projections are based on the most currently available assumptions, Romania acknowledged during the review that their GHG emission projections remain uncertain owing to the economic crisis at the national and global levels and the lack of an updated 2030 strategy for key sectors (e.g. industry, agriculture and transport). As such, the evolution of key economic drivers remains the dominant factor affecting the projections.

74. Assumptions for the main sectors of Romania's economy (industry, agriculture, construction and services) are based on the forecasted economic development of Romania. In its NC6, the macroeconomic drivers (e.g. production levels) for the main industrial sectors in Romania are not reported. During the review, Romania presented information related to the growth rates for mineral products, chemical industry, metal production and aluminium production. To increase transparency of the GHG projections, Romania may consider reporting industrial production trends in its next NC.

75. The NC6 provides results for the three scenarios analysed ('without measures', 'with measures' and 'with additional measures'), as well as a sensitivity analysis for the energy sector, which accounts for approximately 70 per cent of emissions from fuel combustion in Romania. Overall, in the sensitivity analysis, the ERT noted that there was little variation across the key assumptions and in the resulting evolution of energy demand in the transport and commercial/service sectors. As a result, the variation within the baseline scenario in 2020 of the sensitivity analysis ranges from –3,825 kt $CO_2$ eq (or –4.8 per cent) for the 'minimum' scenario to 1,048 kt $CO_2$ eq (1.3 per cent) for the 'maximum' scenario. For 2030, the variation around the baseline scenario ranges from –3,189 kt $CO_2$ eq (or –3.8 per

[10] Energy and Power Evaluation Program.
[11] Carbon Budget Model of the Canadian Forest Sector.

cent) for the 'minimum' scenario to 3,230 kt $CO_2$ eq (3.9 per cent) for the 'maximum' scenario.

### 2. Results of projections

76. Under the Kyoto Protocol, Romania agreed to reduce its GHG emissions by 8 per cent compared with the base year (1989) level during the first commitment period (2008–2012). According to the latest inventory data, the Party's total GHG emissions (excluding LULUCF) were 55.7 per cent below the base year level in 2011. Furthermore, when including the net removals due to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, Romania's total GHG emissions (including LULUCF) were 64.8 per cent below the base year level in 2011. Therefore, Romania will most likely meet its Kyoto Protocol target by domestic efforts alone (PaMs and the use of accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol), without making use of the provisions in Articles 6, 12 or 17. Romania does, however, participate in the development of joint implementation (JI) projects in cooperation with different countries by serving as the host country. For the second commitment period of the Kyoto Protocol (2013–2020), the EU and its 28 member States (EU-28) have agreed to reduce emissions by 20.0 per cent by 2020 compared with the 1990 level (equivalent to a 14.0 per cent reduction compared with in 2005).

77. Under the Convention, the EU-28 communicated an independent quantified economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The joint target of the EU-28 is implemented through binding legislation known as the EU climate and energy package, which was adopted in 2009. The EU-28 plans to meet the target through efforts divided among member States (the ESD) in both the ETS and non-ETS sectors as follows: (a) a 21 per cent GHG emission reduction by 2020 compared with the 2005 level in the ETS sectors; and (b) a 10 per cent GHG emission reduction by 2020 compared with the 2005 level under the ESD in the non-ETS sectors. The ESD includes binding renewable energy goals and non-binding energy efficiency goals for each member State. The EU climate and energy package allows certified emission reductions (CERs) and emission reduction units (ERUs) to be used for compliance purposes, subject to a number of restrictions, including a limit of 50 per cent of the required reduction below the 2005 level for the ETS sectors. With regard to the target under the Convention for the EU-28, emissions and removals from the LULUCF sector are excluded from the non-ETS sectors under the ESD.

78. Romania's non-ETS sector GHG emissions target is to limit GHG emissions growth to 19.0 per cent above the 2005 level by 2020. In addition, under the ESD, Romania has committed itself to achieving a binding target of a 24.0 per cent share of RES in the final consumption of energy by 2020 and a non-binding target to achieve an increase in energy efficiency of 19.0 per cent by 2020, which translates into an indicative national target of primary energy consumption for 2020 of 30.32 Mtoe. To achieve an increase in energy efficiency of 19.0 per cent by 2020, Romania has prepared its second National Action Plan on Energy Efficiency for 2011–2020 (para. 50). To achieve its target of a 24.0 per cent share of RES in the final consumption of energy by 2020, Romania has prepared its National Renewable Energy Action Plan (para. 49). In 2010, Romania had already achieved a 19.0 per cent share of RES in its final energy consumption.

79. The emission projections provided in the NC6 do not differentiate between the EU ETS and non-ETS sectors. During the review, Romania provided additional information to the ERT that enabled them to estimate the non-ETS projections. Based on the data provided, the projections indicate that Romania underachieves the non-ETS target for 2020 by 593 kt $CO_2$ eq (0.71 per cent) under the 'without measures' scenario, while Romania overachieves the target for 2020 by 431 kt $CO_2$ eq (7.7 per cent) and 8,967 kt $CO_2$ eq

(10.7 per cent), respectively, under the 'with measures' scenario and 'with additional measures' scenario. In order to facilitate the assessment of the progress of the Party towards achieving its target for the non-ETS sectors by 2020, Romania may consider providing emission projections for the EU ETS and non-ETS sectors separately in its next NC.

80. The overall emission projections provided by Romania indicate that emissions are expected to increase from 2011 to 2020, resulting in emission levels in 2020 of 140,509.80 kt $CO_2$ eq under the 'without measures' scenario (42.5 per cent below the 1990 level), 132,910.80 kt $CO_2$ eq under the 'with measures' scenario (45.6 per cent below the 1990 level) and 129,891.53 kt $CO_2$ eq under the 'with additional measures' scenario (46.9 per cent below the 1990 level). In addition, the projections show that emissions are expected to continue to increase from 2020 to 2030, resulting in emission levels in 2030 of 160,193.77 kt $CO_2$ eq under the 'without measures' scenario (34.5 per cent below the 1990 level), 147,457.43 kt $CO_2$ eq under the 'with measures' scenario (39.7 per cent below the 1990 level) and 143,891.06 kt $CO_2$ eq under the 'with additional measures' scenario (41.1 per cent below the 1990 level).

81. According to the reported projections, Romania is expected to achieve its 2020 targets for all three scenarios. The projected emission levels under different scenarios and information on the Party's Kyoto Protocol targets and quantified economy-wide emission reduction target are presented in table 5 and the figure below.

82. Romania reported that $CO_2$ emissions in 2011 were 87,962.88 kt $CO_2$ eq, and accounted for 71.3 per cent of total emissions. Under the 'with measures' scenario for 2020, $CO_2$ emissions will increase to 95,235.10 kt $CO_2$ eq from the 2011 levels (8.3 per cent increase) and account for almost the same share of all projected GHG emissions as in 2011 (71.7 per cent). Under the 'with additional measures' scenario for 2020, $CO_2$ emissions will increase to 94,179.66 kt $CO_2$ eq from the 2011 level (7.1 per cent increase) and account for 72.5 per cent of all projected GHG emissions.

83. $CH_4$ emissions in 2011 were 22,258.13 kt $CO_2$ eq, and accounted for 18.0 per cent of all emissions. Under the 'with measures' scenario for 2020, $CH_4$ emissions will increase only slightly, to 22,590.80 kt $CO_2$ eq, from the 2011 level (1.5 per cent increase) and account for almost the same share of all projected GHG emissions as in 2011 (17.0 per cent). Under the 'with additional measures' scenario for 2020, $CH_4$ emissions will decrease to 21,561.53 kt $CO_2$ eq from the 2011 level (3.1 per cent decrease) and account for 16.6 per cent of all projected GHG emissions. $N_2O$ emissions in 2011 were 12,679.45 kt $CO_2$ eq, and accounted for 10.3 per cent of all emissions. Under the 'with measures' scenario for 2020, $N_2O$ emissions will increase to 14,373.34 kt $CO_2$ eq from the 2011 level (13.4 per cent increase) and account for 10.8 per cent of all projected GHG emissions. Under the 'with additional measures' scenario for 2020, $N_2O$ emissions will increase to 13,438.76 kt $CO_2$ eq from the 2011 level (6.0 per cent increase) and account for 10.3 per cent of all projected GHG emissions.

84. The most significant sectoral GHG emission increases under the 'with measures' scenario from 2011 to 2020 are projected to occur in the industry/industrial processes sector (5,017.86 kt $CO_2$ eq, or 39.4 per cent), followed by transport (3,745.06 kt $CO_2$ eq, or 25.7 per cent) and agriculture (1,941.05 kt $CO_2$ eq, or 10.3 per cent). Over the same period, GHG emissions from the waste sector are projected to decrease by 537.41 kt $CO_2$ eq (10.0 per cent) and GHG emissions from the energy sector are projected to decrease slightly by 614.90 kt $CO_2$ eq (0.9 per cent). If additional measures are considered ('with additional measures' scenario), the sectoral proportions remain approximately the same, with an additional emission reduction of 3,019.29 kt $CO_2$ eq in the total emissions projections.

Table 5
**Summary of greenhouse gas emission projections for Romania**

| | *Greenhouse gas emissions (kt $CO_2$ eq per year)* | *Changes in relation to the base year[a] level (%)* | *Changes in relation to the 1990 level (%)* |
|---|---|---|---|
| Kyoto Protocol base year[b] | 278 225.02 | – | 13.8 |
| Kyoto Protocol target for the first commitment period (2008–2012) | 255 967.02 | –8.0 | 4.7 |
| Kyoto Protocol target for the second commitment period (2013–2020)[c] | Not available yet | | |
| Quantified economy-wide emission reduction target[d] | Not available yet | | |
| Inventory data 1990[e] | 244 487.26 | –10.6 | 0.0 |
| Inventory data 2011[e] | 123 359.15 | –55.7 | –49.5 |
| Average annual emissions for 2008–2011[e] | 125 196.58 | –54.2 | –48.8 |
| 'Without measures' projections for 2020[f] | 140 509.80 | –48.6 | –42.5 |
| 'With measures' projections for 2020[f] | 132 910.80 | –51.4 | –45.6 |
| 'With additional measures' projections for 2020[f] | 129 891.53 | –52.5 | –46.9 |
| 'Without measures' projections for 2030[f] | 160 193.77 | –41.4 | –34.5 |
| 'With measures' projections for 2030[f] | 147 457.43 | –46.1 | –39.7 |
| 'With additional measures' projections for 2030[f] | 143 891.06 | –47.4 | –41.1 |

[a] "Base year" in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

[b] The Kyoto Protocol base year level of emissions is provided in the initial review report contained in document FCCC/IRR/2007/ROU.

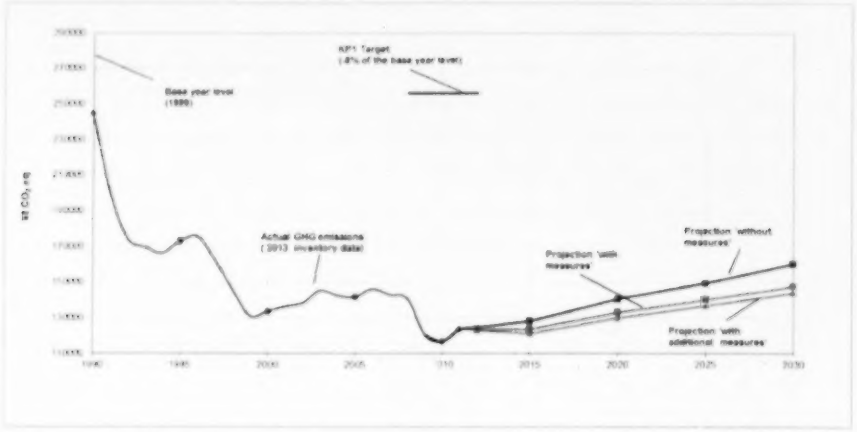
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target for the European Union and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent by 2020 compared with the base year level. The target for sectors not covered by the European Union Emissions Trading System is to limit emissions growth to 19 per cent above the 2005 level by 2020 (+19 per cent) for Romania under the European Union effort-sharing decision.

[d] Quantified economy-wide emission reduction target under the Convention is a joint target for the European Union and its 28 member States. The target is to reduce emissions by 20 per cent by 2020 compared with the base year (1990) level.

[e] Romania's 2013 greenhouse gas inventory submission (version 2.2); the emissions are without land use, land-use change and forestry.

[f] Romania's sixth national communication and/or first biennial report.

**Greenhouse gas emission projections**




*Sources*: (1) Data for the years 1989–2011: Romania's 2013 greenhouse gas inventory submission (version 2.2); the emissions are without land use, land-use change and forestry; (2) Data for the years 2012–2030: Romania's sixth national communication and/or first biennial report; the emissions are without land use, land-use change and forestry.

*Note*: The target for the second commitment period of the Kyoto Protocol is based on preliminary estimates of the base year emissions for the first commitment period of the Kyoto Protocol and quantified emission limitation or reduction objective included in annex 1 to decision 1/CMP.8. The initial assigned amount for the second commitment period will be established after the initial review for the second commitment period of the Kyoto Protocol.

*Abbreviations*: GHG = greenhouse gas, KP1 = First commitment period of the Kyoto Protocol.

### 3. Total effect of policies and measures

85. In its NC6, Romania presents the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a $CO_2$ eq basis), in 2015 and 2020. In its NC6, Romania also presents relevant information on factors and activities for each sector for the years 1990 to 2030.

86. However, in the textual and tabular portion of the "Assessment of aggregate effects of PaMs" section of its NC6, Romania incorrectly stated that the difference between GHG emissions in the 'with measures' scenario and 'without measures' scenario represents the estimated and expected total effect of its planned PaMs, and not its implemented and adopted PaMs. During the review, Romania confirmed that this error was a technical oversight, and that the aggregate effect of its PaMs presented in its NC6 are the estimated and expected total effect of its implemented and adopted PaMs. To improve transparency, the ERT encourages Romania to verify that the total effect of its implemented and adopted PaMs is correctly identified in its next NC.

87. In its NC6, Romania did not present the total effect of its implemented and adopted PaMs for the years 1995, 2000, 2005 or 2010. To improve the completeness of the reporting, the ERT recommends that Romania provide an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs for at least one historic year. In addition, Romania did not present the total expected effect of its planned PaMs. To increase the completeness of reporting, the ERT encourages Romania to include this information in its next NC.

88. In its NC6, Romania provides the estimated effects of its individual PaMs in the PaMs chapter. When these values are aggregated, the estimated total effect is significantly different to the aggregated effect reported in the projections chapter of its NC6. During the review, Romania stated that owing to the possible overlap in emission reductions, it is not feasible to aggregate the individual PaMs in order to estimate the total effect of its PaMs. To increase transparency, the ERT encourages Romania to explain how the estimated effects of the individual PaMs relate to the aggregate effect of its PaMs in the next NC.

89. In its NC6, Romania reported that the total estimated effect of its adopted and implemented PaMs in 2020 is 7,599.00 kt $CO_2$ eq. According to the information reported in the NC6, PaMs implemented and adopted in the energy sector will deliver the largest emission reductions, followed by the effect of PaMs implemented and adopted in the waste management sector. The most effective PaMs and drivers behind GHG emission reductions are described in chapter II.B above. Table 6 provides an overview of the total effect of PaMs as reported by Romania.

Table 6
**Projected effects of planned, implemented and adopted policies and measures in 2015 and 2020**

| *Sector* | *Effect of implemented and adopted measures (kt $CO_2$ eq)* | *Relative value (% of 1990 emissions)* | *Effect of planned measures (kt $CO_2$ eq)* | *Relative value (% of 1990 emissions)* | *Effect of implemented and adopted measures (kt $CO_2$ eq)* | *Relative value (% of 1990 emissions)* | *Effect of planned measures (kt $CO_2$ eq)* | *Relative value (% of 1990 emissions)* |
|---|---|---|---|---|---|---|---|---|
| | *2015* | | | | *2020* | | | |
| Energy (without transport) | 1 489.22 | 0.8 | NE | NA | 2 408.22 | 1.4 | NE | NA |
| Industrial processes | 681.65 | 2.7 | NE | NA | 730.68 | 2.9 | NE | NA |
| Agriculture | 930.00 | 2.5 | NE | NA | 2 384.75 | 6.5 | NE | NA |
| Waste management | 1 337.49 | 29.2 | NE | NA | 2 072.07 | 45.2 | NE | NA |
| **Total** | **4 440.74** | **1.8** | NE | NA | **7 599.00** | **3.1** | NE | NA |

*Source:* Romania's sixth national communication and/or first biennial report.
*Note:* The total effect of implemented and adopted policies and measures is defined as the difference between the 'without measures' and 'with measures' scenarios.
*Abbreviations:* NA = not applicable, NE = not estimated.

### 4. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

90. Romania in its NC6 provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. The ERT noted that Romania does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

91. The NC6 reports that Romania signed 9 memoranda of understanding with different Parties included in Annex I to the Convention (Austria, Denmark, Finland, France, Italy, Netherlands, Norway, Sweden and Switzerland) as well as 1 with the World Bank for the Prototype Carbon Fund (PCF), establishing the legal framework for developing JI projects. Under these memoranda 23 JI projects have received the Letter of Approval, and they are currently in different stages of development. The total amount of emission reductions estimated to be generated in the period 2008–2012 by these projects is approximately 13 million tonnes of $CO_2$ eq. The projects are mainly developed at the levels of the local

authority and focus on district heating systems (including the use of renewable energy sources) and the closing of urban waste landfills.

92. Regarding Article 17 of the Kyoto Protocol, the Romanian Government adopted Governmental Decision 432/2010 which contains institutional and legislative frameworks for the initiation and development of the Green Investment Scheme (GIS). GIS is a mechanism linking the sales of assigned amount units (AAUs) to the implementation of projects and programmes focusing on GHG emission reductions and adaptation to climate change. The support scheme proposed by Romania and approved by the European Commission is based on green certificates and compulsory quotas for producing energy from renewable sources.

## D. Provision of financial resources and technology transfer to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

93. Romania is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil the obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention and Article 11, paragraphs 2 and 3, of the Kyoto Protocol. However, Romania has provided information on financial resources provided through multilateral channels related to the implementation of the Convention. In 2011, Romania provided USD 202,599.46 to the Global Environment Facility (GEF). In 2012, Romania provided USD 243,119.35 to the UNFCCC Trust Fund for Supplementary Activities.

94. During the review, Romania reported on its cooperation with the Republic of Moldova. Romania has pledged EUR 15 million to be transferred as fast start financing to the Republic of Moldova, mainly for increasing energy efficiency in buildings and improving road infrastructure. The Party may consider including information regarding its cooperation with the Republic of Moldova, as well as the steps or actions implemented to ensure these types of projects are sustained over time, in its next NC. Table 7 summarizes information on financial resources.

Table 7
**Summary of information on financial resources for 2011 and 2012**
(United States dollars)

| | *Years of disbursement* | |
|---|---|---|
| *Allocation channel of public financial support* | *2011* | *2012* |
| Contributions through multilateral channels, including: | | |
| Contributions to the Global Environment Facility | 202 599 | |
| Contributions through United Nations bodies | | 243 119 |

## E. Vulnerability assessment, climate change impacts and adaptation measures

95. In its NC6, Romania has provided the required information on the expected impacts of climate change in the country and on adaptation options. The National Strategy for Climate Change in Romania, which has an important adaptation section, was approved in July 2013 by Governmental Decision 529/2013. This strategy refers to the effects of climate change on water safety, agriculture, energy, transport, industry, insurance, biodiversity, health, tourism, forestry, infrastructure and recreational activities. The

National Strategy for Climate Change in Romania builds upon the Guide on Adaptation to Climate Change issued in 2008. The National Strategy for Climate Change in Romania includes additional guidance on the approaches and institutional cooperation needed to cope with climate change in Romania in an integrated and multisectoral manner.

96. On the national level, the National Strategy for Climate Change in Romania recommends: periodically updating climate change projections; supporting climate research and building a national database on climate change; assessing costs related to climate change for priority sectors; elaboration of the National Agenda on Climate Change and implementing it in relevant policies; monitoring and analysis of adaptation to climate change; and raising the awareness of the general public to climate-related matters.

97. In its NC6, Romania does not include information on:

(a) The use of Intergovernmental Panel on Climate Change (IPCC) technical guidelines and the United Nations Environment Programme (UNEP) handbook;

(b) Integrated plans for coastal zone management, water resources and agriculture;

(c) Specific results of scientific research in the field of vulnerability assessment and adaptation.

98. During the review, the Party provided this information. To increase the completeness of reporting, the ERT encourages the Party to include this information in its next NC.

99. Table 8 summarizes the information on vulnerability and adaptation to climate change presented in the NC6.

Table 8
**Summary of information on vulnerability and adaptation to climate change**

| *Vulnerable area* | *Examples comments adaptation measures reported* |
|---|---|
| Biodiversity and natural ecosystems | *Vulnerability*: the direct effect on the evolution of living creatures, initially on their ability to adapt and subsequently on their ability to survive, being likely to act in extreme cases as extinction factors for certain species in the food chains; having drastic consequences on local biodiversity<br>*Adaptation*: the setting up of a national monitoring system for endangered species, performed with public and private support, through national programmes and through the participation of civil society; decrease of agricultural activities in the areas directly affected and the implementation of appropriate measures to protect the natural and semi-natural habitats existing close to agricultural land |
| Energy | *Vulnerability*: modification to the seasonal demand for electricity (lower during the winter and higher during the summer); problems may occur in the energy sector regarding the electricity production by hydropower plants; electricity blackouts due to the energy demand of consumers for air-conditioning equipment during the summer<br>*Adaptation*: the promotion of renewable energy production; determining the critical energy system infrastructure measures required in case of extreme weather phenomena (storms, tornadoes, floods, droughts, very low temperatures) |
| Forests | *Vulnerability*: a decrease in forest productivity and forest diversity after 2040 because of high temperatures and low rainfall; forest fires, causing damage and endangering human lives can be caused by high temperatures and/or extreme weather events (e.g. lightning, storms)<br>*Adaptation*: an intensification of reforestation; continuous monitoring of the health of forests |

| *Vulnerable area* | *Examples comments adaptation measures reported* |
|---|---|
| Human health | *Vulnerability*: the impact of heat waves in urban areas<br>*Adaptation*: develop risk maps for heat waves in urban areas of Romania |
| Industry | *Vulnerability*: degradation of infrastructure under the effect of natural phenomena (e.g. high temperature, precipitation, wind) and those associated with extreme weather events; torrential rains have caused flooding of surface mining areas; landslides have compromised access to industrial sites; droughts have had an impact in reducing hydropower production, which increased the amount of energy from conventional sources, resulting in an increase in emissions of greenhouse gases<br>*Adaptation*: Orient industrial sectors towards sustainable development, the use of energy-efficient products and the use of the renewable energy; provide training and awareness of adaptation to climate change, as the industrial sector will be responsible for promoting technologies resilient to climate change |
| Infrastructure, construction and urban planning | *Vulnerability*: the effects of extreme weather events, such as heat waves, abundant snowfalls, storms, floods; the increasing instability and modification of certain geophysical features (e.g. mountain slopes)<br>*Adaptation*: modification of existing building standards to meet future climate conditions and extreme weather events; providing more green space for residents and/or shaded areas; introducing more efficient heating and cooling systems; the promotion of mandatory insurance for housing against natural disasters (e.g. floods, landslides) |
| Transport | *Vulnerability*: the direct impact on maritime transport as a result of the fluctuations to the conditions of the rivers and streams; floods, landslides and torrents are the main threats to transport and for transport infrastructure<br>*Adaptation*: facilitate alternative modes of transport such as walking or cycling; construction/rehabilitation of the protection systems for dams and riverbanks |
| Tourism | *Vulnerability*: extreme temperatures negatively influence the number of foreign tourists at the Black Sea coast; increasing temperatures have a negative impact on the occupancy rate in the mountain area<br>*Adaptation*: tourist areas need to change their traditional business models. In the medium and long term, in mountain locations, alternative activities to traditional winter sports should be considered. In the short and medium term, at seaside locations, the tourist season should be extended beyond the traditional interval from May to September |
| Water resources | *Vulnerability*: warmer and shorter winters lead to a decrease in the seasonal snow volume and to early and fast snow melting; increased stress on water as needs for irrigation in agriculture grow<br>*Adaptation*: design and implement solutions for the collection and use of rain water; more efficient water use and conservation; increase recycling of water for industrial needs |

100. In its NC6, Romania focuses more on adaptation than on vulnerability. Compared with its NC5, Romania's NC6 expands on the information reported regarding vulnerability to include the assessment of the water resources, tourism, transport, insurance and recreational activities sectors. In its NC6, Romania has not provided information on cooperation with developing countries in preparing for adaptation, primarily because of its current emphasis on domestic efforts. To increase transparency, Romania may consider including information regarding its cooperation with developing countries in preparing for adaptation, or discuss why it does not do so, in its next NC.

## F. Research and systematic observation

101. Romania has provided information on its actions relating to research and systematic observation and addressed both domestic and international activities, including the World

Climate Research Programme, the International Geosphere–Biosphere Programme, GCOS, and the IPCC. Furthermore, Romania has provided a summary of information on GCOS activities.

102. In its NC6, Romania did not report actions taken to support related capacity-building in developing countries. During the review, Romania cited its financial contributions through multilateral organizations, such as GEF and the UNFCCC Trust Fund for Supplementary Activities. To increase the completeness of reporting, the ERT recommends that Romania include a discussion regarding actions taken to support related capacity-building in developing countries in regards to research and systematic observation in its next NC.

103. In addition, in its NC6, Romania did not:

(a) Identify the opportunities for, and barriers to, free and open international exchange of data and information, and report on action taken to overcome barriers;

(b) Provide information on climate process and climate system studies, modelling and prediction, research on the impact of climate change, and socioeconomic analysis;

(c) Provide information on the current status of national plans, programmes and support for ground- and space-based climate observing systems, including long-term continuity of data, data quality control and availability and exchange and archiving of data for atmospheric climate observing systems, ocean climate observing systems, terrestrial climate observing systems, and support for developing countries to establish and maintain observing systems, including related data and monitoring systems.

104. During the review, Romania presented this information to the ERT. For example, Romania informed the ERT that the support provided for developing countries to establish and maintain observing systems is provided through the World Meteorological Organization (WMO). To increase the completeness of reporting, the ERT encourages Romania to include such information in its next NC.

105. As outlined in the NC6, national research activities are carried out along with participation in international and European programmes, such as the European Framework Programmes and Global Earth Observation System of Systems (GEOSS). The Ministry of Education and Research has the main responsibility for coordinating research activities in Romania. This is done by providing financial support for research projects selected from national competitions that are organized by its Executive Unit for Scientific Research. Also, the Ministry for Education and Research financially supports a part of the contributions to the European and international research area.

106. MECC coordinates and financially supports research on water management, climate-related environmental risks and sustainable adaptation planning. The Ministry of Regional Development and Tourism is the focal point on the South Eastern Europe Transnational Cooperation Programme, which partially supports projects on adaptation to climate change and climate-related risk assessments in relation to disaster management.

107. Regarding systematic observation, Romania has actively participated in various areas of climate-related monitoring, both nationally and within European and global programmes. The National Meteorological Administration is the main organization that performs systematic observations on atmospheric climate and, to a lesser extent, on parts of sea and terrestrial climate. These observations are recorded by the National Meteorological Network, which is designed for making observations, primary validations and data transfer. Romania has exchanged data internationally and contributed to European and global databases, and complies with GCOS requirements. The GCOS monitoring principles and best practices are taken into account in Romania's systematic observation activities. In

Romania, these activities have been synchronized with the European research area and WMO programmes and with GCOS on a global level.

### G. Education, training and public awareness

108. In the NC6, Romania has provided some information on its actions relating to education, training and public awareness at both the domestic and international level. This includes several examples of projects, programmes, seminars and knowledge-sharing activities that Romania is either leading or participating in with other governmental bodies. While some public awareness activities were briefly mentioned in the education and training sections, it was not apparent to the ERT what were Romania's actions relating to public awareness. In order to increase the transparency of its reporting, the ERT recommends that Romania clearly identify which programmes and activities are related to public awareness, in its next NC.

109. The National Sustainable Development Strategy of Romania – Horizon 2013, 2020 and 2030 (Governmental Decision 1460/2008) recognizes that the Romanian educational and training system is a priority objective of strategic importance and a basic precondition for the effective implementation of the principles of sustainable development in the medium and long term. In Romania, the responsible authorities for the initial vocational education and training (IVET) system and the continuing vocational education and training (CVET) system are the Ministry of National Education and Ministry for Labour, Family, Social Protection and Elderly, and the National Authority for Qualifications. IVET is the professional education and training system established within the national education system, which includes climate change issues as part of the curricular activities at primary, high school and college levels. For example, geography books for grades 5–8 contain topics such as "the impacts of human activities on the environment", "the planet in transformation" and "solutions for the protection of the geographical environment".

110. In Romania, non-governmental organizations (NGOs) are playing an increasing role in the public engagement and awareness process through different projects and public outreach. Such efforts aim to support sustainable development and to improve the quality of the environment in Romania through the NGOs' contributions and public participation. Many of these projects are supported by the European Economic Area (EEA) Financial Mechanism 2004–2009, which aims to contribute to the reduction of economic and social disparities in the EEA and to strengthen the bilateral relations between Romania and the donor States Iceland, Liechtenstein and Norway. In addition, the NGO Fund Programme in Romania, which is financed through the EEA Financial Mechanism, addresses NGO and citizen engagement, social justice, sustainable development, welfare and basic services, and NGO capacity development.

## III. Summary of reviewed supplementary information under the Kyoto Protocol

### A. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

111. Supplementary information provided by Romania under Article 7, paragraph 2, of the Kyoto Protocol in its NC6 is partially complete and mostly transparent. The supplementary information is placed in different sections of the NC6. Table 9 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC6 chapters in which this information is provided.

112. Romania has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: a complete description of the national registry; identification of steps taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels; information on what efforts Romania is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention; and a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and sustainable use of natural resources. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the relevant sections of this report. The ERT recommends that Romania include these reporting elements in its next national communication.

Table 9
**Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol**

| *Supplementary information* | *Reference to the sixth national communication* |
|---|---|
| National registry | Section III.D |
| National system | Section III.C |
| Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 | Section V.C |
| Policies and measures in accordance with Article 2 | Section IV |
| Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures | Section IV.B |
| Information under Article 10 | Section VIII.B |
| Financial resources | Section VII |

*Note*: Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Romania is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

## B. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

113. Romania reported the information requested in section H, "Minimization of adverse impacts in accordance with Article 3, paragraph 14", of the annex to decision 15/CMP.1 as a part of its 2013 annual submission. During the review, Romania provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be complete and transparent. The ERT commends Romania for the additional information provided and the ERT noted that Romania could continue exploring and reporting on the adverse impacts of the response measures.

# IV. Conclusions and recommendations

114. The ERT conducted a technical review of the information reported in the NC6 of Romania according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a general overview of the national climate policy of Romania. The information provided in the NC6 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol with the exception of some information on: the national registry; PaMs in accordance with Article 2 of the Kyoto Protocol; and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures. During the review, Romania provided all missing information under Article 7 of the Kyoto Protocol, as well as additional information regarding how its national circumstances affect GHG emissions and removals, its actions taken to support related capacity-building in developing countries, its non-ETS targets and associated emission projections, its projection modelling scenarios and its GCOS activities.

115. Romania's emissions for 2011 were estimated to be 54.9 per cent below its base year level (1989) excluding LULUCF and 61.1 per cent below including LULUCF. Emissions decreased by 52.1 per cent from 1989 to 1999 because of the transition of Romania from a centralized to a market economy. This transition resulted in a decrease in industrial output, the closing of some industrial and manufacturing facilities, and a decrease in energy consumption. Emissions increased by 6.4 per cent from 2000 to 2007 owing to economic growth in Romania, with emissions decreasing after 2007 owing to the impact of the global financial and economic crisis. In 2011, emissions increased owing to improving economic growth and continued reliance on fossil fuels for the primary energy supply.

116. In the NC6, Romania presents GHG projections for the period 2015–2030. Three scenarios are included: a baseline scenario ('without measures'), 'with measures' and 'with additional measures'. The projected reductions in GHG emissions in 2020 under the baseline scenario, the 'with measures' and 'with additional measures' scenarios, in relation to the base year (1989), are 41.4 per cent, 46.1 per cent and 47.4 per cent, respectively.

117. Based on the comparison of the target and the average annual emissions for the first commitment period (2008–2011), Romania is in a position to meet its Kyoto Protocol target for the first commitment period (8.0 per cent reduction) with domestic PaMs alone. Romania participates in and contributes to the EU target of a 20 per cent reduction in GHG emissions in 2020 under the Convention and its Kyoto Protocol second commitment period. For the non-ETS sectors (excluding LULUCF under the Kyoto Protocol), Romania has a target to limit emissions growth to 19 per cent above the 2005 level by 2020 (+19 per cent). The projections indicate that Romania is on track to meet its 2020 non-ETS sector target under the Convention.

118. The NC6 contains information on how Romania's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action for the first commitment period of the Kyoto Protocol. Romania is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target as it will meet this target with domestic PaMs alone.

119. Romania reported on its PaMs that have been adopted, implemented and elaborated in achieving its commitments under the Convention and its Kyoto Protocol. The key policy framework related to climate change in Romania is the National Strategy for Climate Change 2013–2020, which addresses the reduction of GHG emissions in achieving the national objectives and GHG emission targets for 2020, as well as adaptation measures. Specifically, the National Strategy takes into account relevant EU policies, such as the EU climate and energy package. The National Strategy for Sustainable Development – Horizons 2013, 2020 and 2030 contains cross-sectoral measures that highlight the

principles of efficiency and the use of the best available technologies and focuses on the future evolution of the energy sector, the industrial sector, the agriculture and forestry sectors, and development of the transport sector in rural areas.

120. Romania is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil obligations as defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, as reported in its NC6, the Party provided information on financial resources related to the implementation of the Convention provided through multilateral channels. In 2011, Romania provided USD 202,599.46 to GEF. In 2012, Romania provided USD 243,119.35 to the UNFCCC Trust Fund for Supplementary Activities.

121. In its NC6, Romania focuses more on adaptation than on vulnerability. Compared with its NC5, Romania's NC6 expands on the information reported regarding vulnerability to include the assessment of the water resources, tourism, transport, insurance and recreational activities sectors. The National Strategy for Climate Change in Romania 2013–2020 refers to the effects of climate change on water safety, agriculture, energy, transport, industry, insurance, biodiversity, health, tourism, forestry, infrastructure and recreational activities. In addition, it includes additional guidance on the approaches and institutional cooperation needed to cope with climate change in Romania in an integrated and multisectoral manner.

122. The National Sustainable Development Strategy of Romania – Horizon 2013, 2020 and 2030 recognizes that the Romanian educational and training system provides a platform for raising awareness of the principles of sustainable development. In Romania, IVET is the professional education and training system established within the national education system, which includes climate change issues as part of the curricular activities at primary, high school and college levels. NGOs are playing an increasing role in the public engagement and awareness process through different projects and public outreach, which aim to support sustainable development and to improve the quality of the environment in Romania through the NGOs' contributions and public participation.

123. National research activities are carried out along with participation in international and European programmes, such as the European Framework Programmes and GEOSS. Regarding systematic observation, Romania has actively participated in various fields of climate-related monitoring, both nationally and within European and global programmes, such as GCOS. Romania has internationally exchanged data and contributed to European and global databases, and complies with GCOS requirements.

124. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by the Party in its 2013 annual submission, which is complete and transparent.

125. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Romania's reporting under the Convention and its Kyoto Protocol. The key recommendations[12] are that Romania:

(a) Improve completeness of reporting by including in the next national communication the following information:

(i) How national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time;

[12] The recommendations are given in full in the relevant sections of this report.

(ii) Details on its national registry database structure and its involvement in CSEUR;

(iii) A description of procedures for addressing cases of non-compliance with its programmes to meet its commitments under the Kyoto Protocol under domestic law;

(iv) A description of any provisions to make information on legislative arrangements and enforcement and administrative procedures (e.g. rules on enforcement and administrative procedures, and action taken) publicly accessible;

(v) A description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources;

(vi) How Romania strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts, on other Parties, especially developing country Parties;

(vii) An estimate of the total effect of PaMs, in accordance with the 'with measures' scenario definition, compared with a situation without such PaMs for at least one historic year;

(viii) Actions taken to support related capacity-building in developing countries;

(b) Improve the transparency of reporting by including in the next national communication the following information:

(i) Non-confidential information regarding the national registry, specifically in reference to the common readiness documentation and specific readiness documentation for the national registry of the EU and all consolidating national registries;

(ii) How the domestic and regional legislative arrangements and administrative procedures Romania has in place to meet its commitments under the Kyoto Protocol are implemented;

(iii) The link between Romania's national PaMs and the overall EU policies;

(iv) The steps Romania has taken to promote and/or implement any decisions by ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels;

(v) Romania's public awareness activities.

## V. Questions of implementation

126. During the review, the ERT assessed the NC6, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness, transparency and adherence to the reporting guidelines on NCs. No question of implementation was raised by the ERT during the review.

# Annex

## Documents and information used during the review

### A. Reference documents

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 23/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=20>.

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a02.pdf>.

FCCC/ARR/2013/ROU. Report of the individual review of the annual submission of Romania submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/rou.pdf>.

FCCC/IRR/2007/ROU. Report of the review of the initial report of Romania. Available at <http://unfccc.int/resource/docs/2008/irr/rou.pdf>.

FCCC/IDR.5/ROU. Report of the in-depth review of the fifth national communication of Romania. Available at <http://unfccc.int/resource/docs/2011/idr/rou05.pdf>.

Sixth national communication of Romania. Available at <http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/6th_nccc_and_1st_br_of_romania%5B1%5D.pdf>.

2013 GHG inventory submission of Romania. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php>.

## B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Sorin Deaconu (Ministry of Environment and Climate Change), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Romania. The following documents[1] were also provided by Romania:

Ministry of Transport and Infrastructure. 2011. *Ministerial Order of the Ministry of Transport and Ministry of Environment and Forests no. 169/2011.*

[1] Reproduced as received from the Party.